UPGA301Ae3

Nanosecond SCR SWITCH

SCOTTSDALE DIVISION

DESCRIPTION

The UPGA301Ae3 is Designed for high current narrow-pulse switching applications where size and current handling capability are critical. These devices may be triggered on using low power logic drivers from (+0.8 V at 200 µA). Epoxy packaged, oxide passivated planar SCR chips with metallurgic bonds on both sides to achieve high reliability. Internal wire bond connection allows high current surge capability for narrow pulse applications.

IMPORTANT: For the most current data, consult *MICROSEMI*'s website: **http://www.microsemi.com**

KEY FEATURES

- Very low thermal resistance package
- Efficient heat path with integral locking bottom metal tab
- Full metallic bottom eliminates flux entrapment
- RoHS Compliant with e3 suffix
- High speed switching capability
- Compatible with high-speed insertion
- Low profile height of 1 mm

ABSOLUTE MAXIMUM RATINGS AT 25º C (UNLESS OTHERWISE SPECIFIED)

Rating	Symbol	Value	Unit
Repetative peak Off-State Voltage	V_{DRM}	100	V
Peak On-State Current for 50 ns (max)	I_{TSM}	100	A
Peak Gate Current	I_{GM}	250	mA
Reverse Gate Voltage	V_{GR}	5	V
Storage Temperature Range	T s	-50 to 150	ºC
Operating Temperature Range	T_J	0 to 125	ºC

THERMAL CHARACTERISTICS (UNLESS OTHERWISE SPECIFIED)

Thermal Resistance			
Junction-to-Case (Anode Bottom)	$R_{\theta JC}$	4.0	ºC/Watt
Junction-to-Ambient (1)	$R_{\theta JA}$	65	ºC/Watt

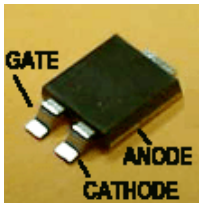
(1)When mounted on 0.06' thick FR4 board with 2 oz copper FR4 board with recommended footprint

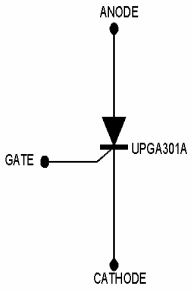
APPLICATIONS/BENEFITS

- Reference Microsemi MicroNote 601 and 602
- Nanosecond SCR switch for reliable high current pulse generators, modulators and photo-flash quenching
- Logic drive capability (0.8V, 200µA)
- Ideal for Laser Range finder and Camera Applications
- Ideal for Automotive Collision Avoidance Applications

MECHANICAL & PACKAGING

- CASE: Void-free transfer molded thermosetting epoxy compound meeting UL94V-0
- FINISH: Annealed matte-Tin plating over copper and readily solderable per MIL-STD-750 method 2026 (consult factory for Tin-Lead plating)
- POLARITY: See figure (left)
- MARKING: 301A•
- WEIGHT: 0.072 gram (approx.)
- Package dimensions on last page
- Tape & Reel option: 16 mm tape per Standard EIA-481-B, 5000 on 13" reel





Small foot print

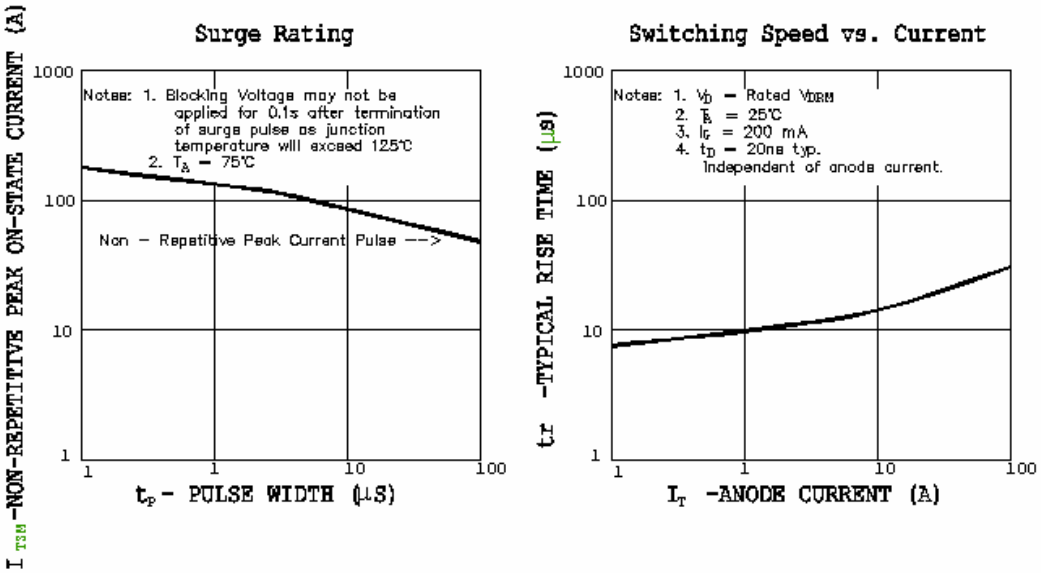
.190 X .270 inches
1:1 Actual size
See mounting pad details on pg 3

Microsemi
8700 E. Thomas Rd. PO Box 1390, Scottsdale Arizona 85252, 480-941-6300, Fax: 480-947-1503

ELECTRICAL PARAMETERS@25°C (unless otherwise specified)

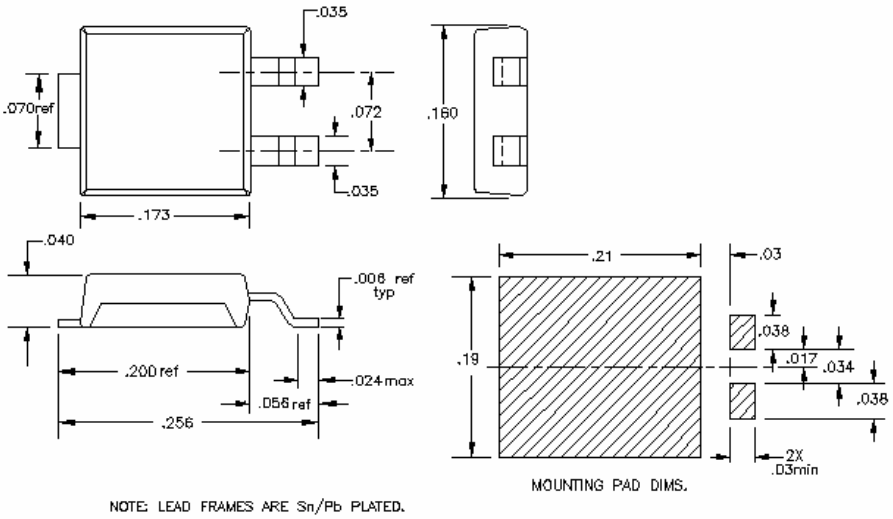
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
On characteristics (up to 100 A w/ 100 ns pulse @ Duty Cycle = 0.0001% or less)						
Forward Blocking Current	I_{DRM}	V_{DRM} = 100 V, R_{GK} = 1 kΩ			1.0	µA
On - State Voltage	V_T	I_T = 1 A, Ig =10 mA		1.1	1.5	V
Gate Trigger Voltage	V_{GT}	V_D = 5 V, R_{GS} = 100 Ω		0.5	0.75	V
Gate Trigger Current	I_{GT}	V_D = 5 V, R_{GS} = 10 kΩ		10	200	µA
Reverse Gate Current	I_{GR}	V_{GR} = 5 V		0.01	0.1	mA
Holding Current	I_H	V_D = 5 V, R_{GK} = 1 kΩ	1.0	3.0	5.0	mA
Reverse Current (Note 1)	I_{RRM}	V_{RRM} = 30 V, R_{GK} = 1 kΩ		1	10	mA
Switching characteristics (Tc = 25 °C)						
Delay Time	td	Ig = 20 mA, I_T = 1 A		20	30	ns
Rise Time	tr	V_D = 60 V, I_T =1 A, Ig =10 mA dc < 1%		15	25	ns
Circuit Commutated Turn—off Time	tq	I_T = 1.0 A , I_R = 1.0 A max, R_{GK} = 1 kΩ		0.3	0.5	µs
Gate Trigger—on Pulse Width	tpg(on)	Ig = 10 mA, I_T = 1 A		20	50	ns
Critical Rate of Rise Off –State Voltage	dv/dt	V_D = 30 V, R_{GK} = 1 kΩ	15	30		V/µs

Note 1: Pulse Test intended to guarantee reverse anode voltage capability for pulse commutation. The device should not be operated in the reverse blocking mode on a continuous basic



Case: Molded Epoxy
Meets UL94V-O at 1/8 inch
Weight: 72 milligrams
Lead and Mounting Temperature: 260°C max for 10 seconds

NOTE: All dimensions are in inches.



PACKAGE DATA

NOTES:

NOTES

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